

Metal Oxide Film Resistors - Axial Leaded

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RoHS
Compliant

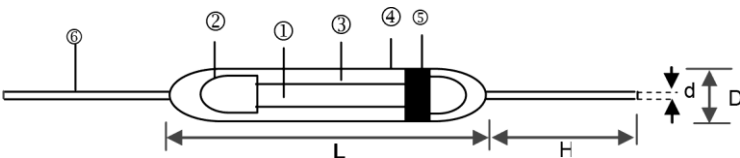


Features

- Excellent Long-Time stability
- High surge / overload capability
- Controlled temperature coefficient
- Resistance standard tolerance: $\pm 2\%$ and $\pm 5\%$
- Electrical and mechanical stability and high reliability

Applications

- Telecommunication
- Medical Equipment

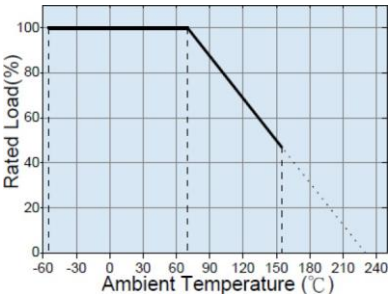


1	Ceramic Rod	4	Non-flame Paint With Sol Vent-proof
2	Tinned Iron Caps	5	Colour Code
3	Metal Oxide Film	6	Lead Wire

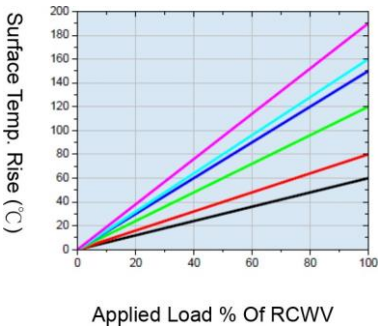
Dimensions

L	D	H	D	Weight (g) (1000pcs)
11.5 $\pm$ 1.0	4.5 $\pm$ 0.5	35 $\pm$ 3.0	0.78 $\pm$ 0.03	760

Derating Curve



Hot-Spot Temperature



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Standard Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Resistance Range		TCR (PPM/°C)
						±2%	±5%	
1145	1W	-55°C to +235°C	500V	600V	500V	0.1Ω to 1MΩ	0.1Ω to 1Ω	±300

Operating Voltage= $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.

• For resistance value out of above range is by request. Below 10Ω and over 51K (excluded) are using alloy film.

• Resistor body colour: Standard Power Rating: Grey

High Power Rating: Grey or Pink are available

Environmental Characteristics

Item	Requirement	Test Method
Resistance Value	0.1Ω – 1MΩ	IEC-60115-1 4.5 Measure at a distance of 10mm from the cap end
Short Time Overload	±(1%+0.05Ω) for standard power ±(2%+0.05Ω) for high power	IEC-60115-1 4.13 2.5 times RCWV for 5 seconds
Insulation Resistance	>1000M Ω	JIS-C-5202 4.6 The measure was executed by V-Block methods
Endurance	±(5%+0.05Ω)	IEC-60115-1 4.25 70±2°C, RCWV (or Umax., whichever less) for 1000 hrs with 1.5 hrs “ON” and 0.5 hrs “OFF”
Damp Heat, Steady State	±(5%+0.05Ω)	IEC-60115-1 4.24 40±2°C, 90~95% R.H. for 56 days, loaded with 0.1 times RCWV (or Umax., whichever less)
Solderability	95% min. Coverage	IEC-60115-1 4.17 245±5°C for 3±0.5 seconds
Voltage Proof	By Type	IEC-60115-1 4.7 In V-Block for 60 seconds
Temperature Coefficient	By Type	IEC-60115-1 4.8 Resistance value at room temperature and room temperature+100°C
Periodic-Pulse Overload Test	± (2%+0.05Ω)	IEC-60115-1 4.39 4 times RCWV (or Umax., whichever less) for 10000 cycles with 1second “ON” and 25 seconds “OFF”
Solvent Resistanc of Marking	No obvious deterioration of coatings and markings.	IEC-60115-1 4.30 IPA for 5±0.5 min. with ultrasonic
Robustness of Terminations	Tensile: ≥ 2.5kg (24.5N)	IEC-60115-1 4.16 Direct Load for 10 seconds In the direction off the terminal leads

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Item	Requirement	Test Method
Temperature Cycling	$\pm (1\%+0.05\Omega)$	IEC-60115-1 4.19 -55°C/155°C with 5 cycles the duration at each temperature 30 min.
Resistance to Soldering Heat	$\pm (1\%+0.05\Omega)$	IEC-60115-1 4.18 The solder iron heated to 260°C $\pm$ 5°C and applied to the termination for duration of 10 $\pm$ 1 seconds.

RCWV (Rated continuous working voltage) = $\sqrt{P \cdot R}$ or Max. Operating voltage whichever is lower

Storage Temperature: 25°C $\pm$ 10°C; Humidity < 80%RH

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Part Number Table

Description	Part Number
Axial Leaded Metal Oxide Film Resistor, 1W, 10R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006406
Axial Leaded Metal Oxide Film Resistor, 1W, 20R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006407
Axial Leaded Metal Oxide Film Resistor, 1W, 100R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006408
Axial Leaded Metal Oxide Film Resistor, 1W, 1K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006409
Axial Leaded Metal Oxide Film Resistor, 1W, 10K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006410
Axial Leaded Metal Oxide Film Resistor, 1W, 100K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006411
Axial Leaded Metal Oxide Film Resistor, 1W, 1M, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006412
Axial Leaded Metal Oxide Film Resistor, 1W, 1M, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006413
Axial Leaded Metal Oxide Film Resistor, 1W, 110R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006414
Axial Leaded Metal Oxide Film Resistor, 1W, 1.1K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006415
Axial Leaded Metal Oxide Film Resistor, 1W, 11K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006416
Axial Leaded Metal Oxide Film Resistor, 1W, 110K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006417
Axial Leaded Metal Oxide Film Resistor, 1W, 1.1M, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006418
Axial Leaded Metal Oxide Film Resistor, 1W, 120R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006419
Axial Leaded Metal Oxide Film Resistor, 1W, 1.2K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006420
Axial Leaded Metal Oxide Film Resistor, 1W, 12K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006421
Axial Leaded Metal Oxide Film Resistor, 1W, 120K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006422
Axial Leaded Metal Oxide Film Resistor, 1W, 150R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006423
Axial Leaded Metal Oxide Film Resistor, 1W, 1.5K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006424
Axial Leaded Metal Oxide Film Resistor, 1W, 15K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006425
Axial Leaded Metal Oxide Film Resistor, 1W, 150K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006426
Axial Leaded Metal Oxide Film Resistor, 1W, 1.5M, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006427
Axial Leaded Metal Oxide Film Resistor, 1W, 200R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006428
Axial Leaded Metal Oxide Film Resistor, 1W, 2K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006429
Axial Leaded Metal Oxide Film Resistor, 1W, 20K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006430
Axial Leaded Metal Oxide Film Resistor, 1W, 200K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006431
Axial Leaded Metal Oxide Film Resistor, 1W, 2M, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006432
Axial Leaded Metal Oxide Film Resistor, 1W, 220R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006433
Axial Leaded Metal Oxide Film Resistor, 1W, 2.2K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006434
Axial Leaded Metal Oxide Film Resistor, 1W, 22K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006435
Axial Leaded Metal Oxide Film Resistor, 1W, 220K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006436
Axial Leaded Metal Oxide Film Resistor, 1W, 2.2M, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006437
Axial Leaded Metal Oxide Film Resistor, 1W, 270R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006438
Axial Leaded Metal Oxide Film Resistor, 1W, 2.7K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006439
Axial Leaded Metal Oxide Film Resistor, 1W, 27K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006440
Axial Leaded Metal Oxide Film Resistor, 1W, 270K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006441
Axial Leaded Metal Oxide Film Resistor, 1W, 2.7M, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006442
Axial Leaded Metal Oxide Film Resistor, 1W, 300R, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006443
Axial Leaded Metal Oxide Film Resistor, 1W, 3K, $\pm 2\%$, $\pm 200\text{PPM}/^\circ\text{C}$	MP006444

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Description	Part Number
Axial Leaded Metal Oxide Film Resistor, 1W, 30K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006445
Axial Leaded Metal Oxide Film Resistor, 1W, 300K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006446
Axial Leaded Metal Oxide Film Resistor, 1W, 3M, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006447
Axial Leaded Metal Oxide Film Resistor, 1W, 390R, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006448
Axial Leaded Metal Oxide Film Resistor, 1W, 3.9K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006449
Axial Leaded Metal Oxide Film Resistor, 1W, 39K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006450
Axial Leaded Metal Oxide Film Resistor, 1W, 390K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006451
Axial Leaded Metal Oxide Film Resistor, 1W, 3.9M, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006452
Axial Leaded Metal Oxide Film Resistor, 1W, 470R, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006453
Axial Leaded Metal Oxide Film Resistor, 1W, 470R, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006454
Axial Leaded Metal Oxide Film Resistor, 1W, 4.7K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006455
Axial Leaded Metal Oxide Film Resistor, 1W, 47K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006456
Axial Leaded Metal Oxide Film Resistor, 1W, 470K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006457
Axial Leaded Metal Oxide Film Resistor, 1W, 4.7M, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006458
Axial Leaded Metal Oxide Film Resistor, 1W, 680R, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006459
Axial Leaded Metal Oxide Film Resistor, 1W, 6.8K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006460
Axial Leaded Metal Oxide Film Resistor, 1W, 68K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006461
Axial Leaded Metal Oxide Film Resistor, 1W, 680K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006462
Axial Leaded Metal Oxide Film Resistor, 1W, 6.8M, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006463
Axial Leaded Metal Oxide Film Resistor, 1W, 820R, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006464
Axial Leaded Metal Oxide Film Resistor, 1W, 8.2K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006465
Axial Leaded Metal Oxide Film Resistor, 1W, 82K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006466
Axial Leaded Metal Oxide Film Resistor, 1W, 820K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006467
Axial Leaded Metal Oxide Film Resistor, 1W, 8.2M, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006468
Axial Leaded Metal Oxide Film Resistor, 1W, 910R, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006469
Axial Leaded Metal Oxide Film Resistor, 1W, 9.1K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006470
Axial Leaded Metal Oxide Film Resistor, 1W, 91K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006471
Axial Leaded Metal Oxide Film Resistor, 1W, 910K , $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006472
Axial Leaded Metal Oxide Film Resistor, 1W, 9.1M, $\pm 2\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006473
Axial Leaded Metal Oxide Film Resistor, 1W, 1R, $\pm 5\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006474
Axial Leaded Metal Oxide Film Resistor, 1W, 2R, $\pm 5\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006475
Axial Leaded Metal Oxide Film Resistor, 1W, 3R, $\pm 5\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006476
Axial Leaded Metal Oxide Film Resistor, 1W, 2.2R, $\pm 5\%$, $\pm 200\text{PPM}/^{\circ}\text{C}$	MP006477

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